

Applicant:
U.S.S.N.:
Filing Date:
EMC Docket No.: EMC

REMARKS

Applicants express appreciation to the Examiner for consideration of the subject patent application. This amendment is in response to the Office Action mailed January 31, 2008 wherein Claims 1-2, 6-9, 13-16 and 20-21 were rejected. The claims are replicated above for convenience of review. No amendments are made to the claims by this response.

Rejections under 35 U.S.C. §102

Claims 1, 2, 6-9, 13-16, 20 and 21 were rejected under 35 U.S.C. §102 as anticipated by Young, U.S. Patent 6,898,681.

It is well known that in order to support a rejection under 35 U.S.C. §102, *every* limitation in the claims should be shown or suggested by the references. As described in the previous response to the office action, Young fails to meet this burden for at least the reason that it neither discloses or suggests the step of:

“... restoring the source by copying data content from the clone to overwrite the data content of the source while allowing host reads and writes to the source during the restoring step, said copying being determined by a clone delta map, used to track extents of the clone that are different between the clone and the source, and a protected restore map, used to track extents of the source that are modified during the restoring step, *when an indication is set in the clone delta map and not set in the protected restore map ...*”

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As described in the previous response, Young fails to condition the copying performed at step S34b based on both a 'set' bit condition in the copy bit map and a 'not set' condition in the shadow bit map. As described in Applicant's specification, at pages 15-16:

When a host-write request is received for the Source LU during a Protected Restore, a determination is made whether a COD is required prior to processing the request. This determination is made by **checking both the Delta Map and the Protected Restore Map. If there are bits set in any of the extents of the Delta Map that represent those regions affected by the host I/O request (read or write) and the corresponding bit is NOT set in the Protected Restore Map, then a COD is required.** After each required COD has completed, the bit that corresponds to the extent affected by the COD is cleared from the Clone's Delta Map. This is done to ensure that the Sync Engine does not subsequently copy the data from the Clone to the Source which would cause a host write request (which triggered a COD) to later be overwritten with data from the Clone.

After each COD required for a host write request has been completed, the bit(s) that correspond to the extent affected by the request are set in the Protected Restore Map. This is done to track the changes between the Source and Clone.

Thus the claims of the present invention recite the extra step of checking to make sure that the shadow bit is not set, and that the delta bit is set before performing a write, to make sure that the sync engine does not overwrite valid data. No mention or suggestion of such a 'check' being performed is found or suggested in Young. Rather,

The Examiner states, at page 3 of the office action:

"... Young teaches that during the recovery or restoration if the new data is to be written to a block in the master store or the source, the corresponding bit in the bitmap in shadow store or clone is set to on..." Applicant respectfully submits that such a teaching does not reach the limitations of the claims, nor would it help to overcome the problem (of overwriting) addressed by the present invention.

It is noted that the above limitation regarding the state of the clone delta map and the protected restore map is present in each of the independent claims. The Examiner is thanked for

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the response provided at page 8 of the office action. However, it appears that the Examiner may have misunderstood Applicant's remarks regarding several distinguishing elements of the claims, and in particular it is not clear whether the Examiner has given patentable weight to the interaction between bitmaps which is clearly recited in the claims. Reconsideration is respectfully requested.

Accordingly, for at least the reason that the prior art fails to describe or suggest every limitation of the claims, it is respectfully requested that the rejection of all claims is improper and it is requested that the rejection be withdrawn.

Conclusion

Accordingly, it is submitted that the claims are now in condition for allowance. A notice to that effect is hereby solicited. In the event the Examiner deems personal contact desirable in the disposition of this case, the Examiner is invited to call the undersigned attorney at (508) 293-6275. Please charge all fees occasioned by this submission to Deposit Account No. 05-0889.

Respectfully submitted,

Dated: March 31, 2008

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